Class-6

Dropbox Design

1. Requirement Analysis :-
   - functional
   - Non-functional
   - Out of scope
2. Capacity estimation :-
   - → assumption
   - → storage estimation.

③ Component design

→ Client
→ Meta data Service
→ Block service
→ Notification service.

- Performance
- Scalability
- Resiliancy.
- Security

④ Data Base Schema

⑤ API design

→ Get object
→ Upload chunk
→ Download chunk

Functional requirement:

→ user from any device can upload/download
→ file/folder share
→ Automatic synchronization (online)
→ offline edit (upon being online data will be synchronized)

Non-functional Requirement.

→ highly reliable (No data loss)

→ highly available

Capacity Estimation:

Assumption :

→ User → 500 million (500,000,000) (Total User)

(Daily Active User) → DAU → 100 million (100,000,000)

→ 200 files per user (Avg)

→ file size (100 KB)

→ Active connection per minute → 1 million

(1M tcp connection থাকতে হবে)

Storage Estimation:

no. of files = 200 files × 500,000,000 users

= 10^{11} files

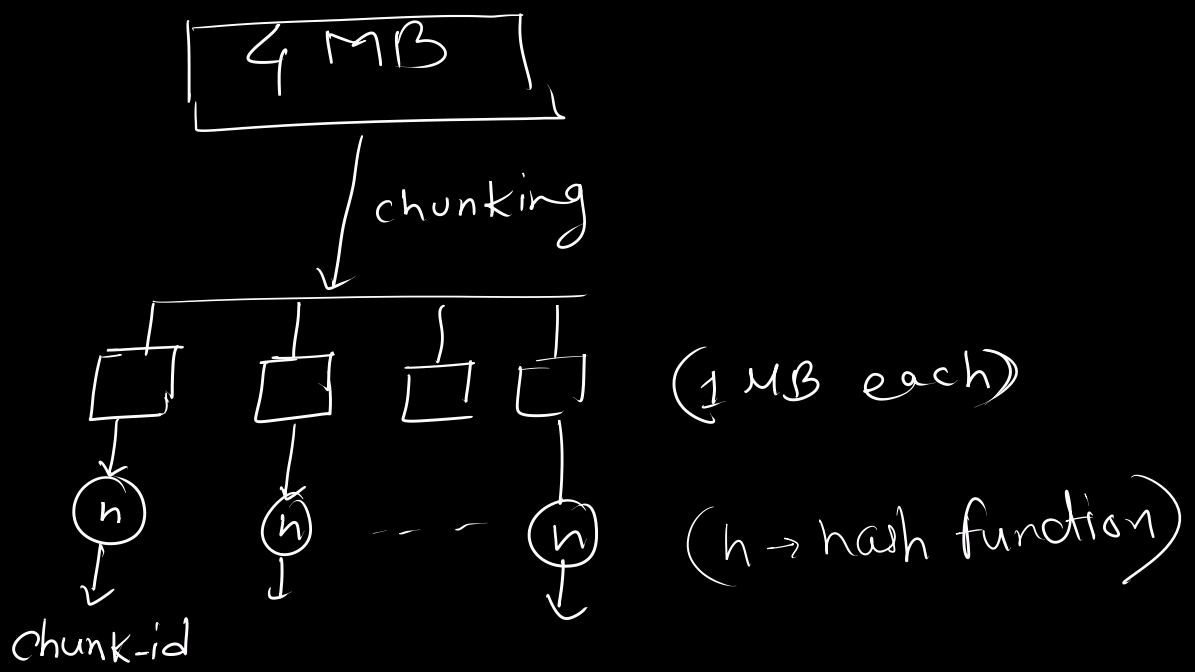
= 100,000,000,000

= 100 billion files

storage = 100 KB × 100 billion files

= 10^{13} KB

≈ 10 PetaByte.

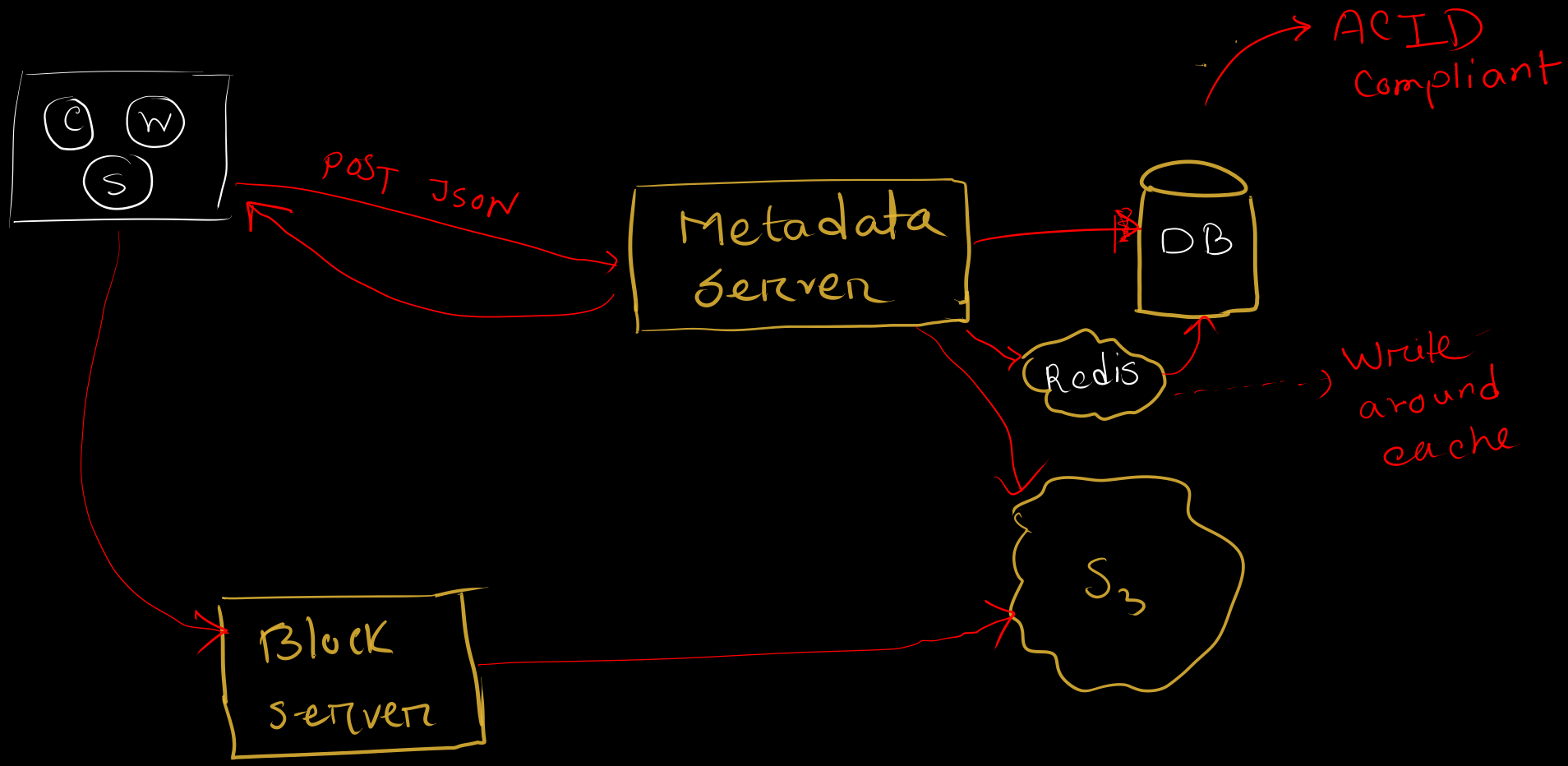


chunker

JSON

```
{
  object-id : ...
  chunks : [ chunk-id1,
             chunk-id2
             ...
           ]
}
```

Metadata



C = Chunker

W = Watcher

S = Sync